



Technical Inspection of Rehabilitation Work

Sliplining / pipebursting of 220m of water 4"main

Location: **Central Kilmarnock (Water Lane) Oct 29 2019**

DWQR auditors: **Matt Bower, Colette Robertson-Kellie, Cameron Melvin**

Quality of Water

Is work being undertaken in a way that avoids a deterioration in water quality?

Are approved products and processes being used?

Is this evidenced by clear sample results / chlorine residuals / visual appearance?

Observations: Pipe used is labelled BS:EN 12201 - approved for water supply. Premises off existing main supplied by 1" overland pipe.

Asset Robustness

Is work being undertaken by SW employees or Contractor?

Any issues / risks with work site? Have these been mitigated adequately?

Does the main have adequate points to enable flushing and disinfection to take place?

Is the depth of excavation appropriate?

Is adequate de-watering equipment available and used?

Is all equipment appropriate to the task?

Are staffing levels adequate? (**check training and blue cards**)

Is the method of repair appropriate to the situation?

Are hygiene standards in van acceptable? (tidy / storage of fuel / clothing / handwashing / fittings bagged / pipe off floor)

Are equipment and fittings being stored correctly on site?

Is there an off-site storage area? Is it appropriately located? Any risks? Tidy? Fittings & chemicals stored correctly?

Observations: Work undertaken by Innovative Utilities on behalf of Scottish Water. Depth of excavation appeared to have originally been adequate although some slumping / filling with water had taken place in a few holes. Squad had pumps to deal with this. Staffing level appeared good - all had blue cards in date (Chris Barker, Mark Blair, William Wilson (foreman), Mark Mclardy. Van was acceptable - no real issues; handwashing available, fittings kept bagged and separate storage for fuels. Cust Care Rep van also OK.

Operational Practices

Effort being made to keep tools and equipment clean?

Chlorous spray available, made up correctly (1000mg/l or 250mg/l) and used?

Is suitable (calibrated) equipment available and used to measure chlorine?

Is main repaired under pressure? (should aim for this if at all possible)

Is the depth of excavation appropriate?

Is adequate de-watering equipment available and used?

Is all equipment appropriate to the task?

Effort made to keep dirty water out of pipe?

End caps (or other protection) used on pipe ends

Has appropriate disinfection taken place? (Check Cl and time being measured and recorded, flushed appropriately)

Has flushing taken place to remove any air?

Are burst repair samples taken as appropriate? (DOMS)

Is sampling undertaken appropriately? (correct bottles, locations, training)

Observations: Tray present for tools etc; were aware of need to keep clean. Pipe coil had end caps. Chlorous spray was available - made daily using dated bottle. Confusion over strength - 1 litre bottles were used; squad said they added 1 to 1.5 instachlor 250 to bottle, although bottle stated 500mg/l. Customer care rep had Instachlor 150 and instachlor 3000 tablets - potentially leading to inconsistency and confusion. Despite there being a temporary overland supply in place, which was feeding a number of shops and cafes, no sampling of this temporary supply had taken place prior to the day of the audit (samples were taken following this and were satisfactory). Sampling was witnessed at a nearby property which was fed from the overland supply; carried out on request from DWQR. The technique was satisfactory and analysis of the sample showed that the supply complied with regulatory standards. However, despite the supply being chloraminated, a high free chlorine residual was detected when on-site chlorine levels were measured (0.74 and 0.69 mg/l free chlorine, 0.84 mg/l total chlorine), suggesting that the analytical technique for chlorine measurement was deficient, or there were issues with the chlorine chemistry in the zone itself. Lead communication pipes had been uncovered during the rehabilitation project; staff reported that lead pipe replacement did not come under their remit so they would reinstate and pass to SW to deal with.

Management of Risk

Has a risk assessment been done and is it available on site?

Is it clear who may operate valves and which valves are to be operated?

Are staff aware of risks to water quality and their role in managing these? (DOMS & Hygiene, valve operation, Flushing)

Is the choice of method appropriate to the risks involved?

Are measures taken to protect consumers (eg from drinking from depressurised main or high chlorine concentrations)

Are boil notices used and issued appropriately?

Who reviews sample data from mains repairs?

Observations: Risk assessment seen on site - fairly rudimentary but standard DOMS - doesn't cover overland supply. No clear plan on sampling overlander - this should be clearly set out in the procedure and documented on site. Protection in place (guard at footpath crossing and a few sandbags. Attempt made to keep against wall - probably not at risk from traffic driving over, but potentially vulnerable to tampering given town centre location and long duration of use.

Recording Information

Are DOMS procedures available to site staff?
What work detail/customer information is available to squad/NSO in work pack?
Are on-site water quality checks (Cl, T&O, pH) being recorded and stored appropriately?
Are disinfection residuals and times recorded?
Is sample paperwork in order? (ensure sample locations are clearly documented)
If Carella used, has it been authorised by Scottish Water and are appropriate measurements being made?
Is information on mains material recorded and checked against GIS?
Observations: Sample paperwork and chlorine records seen. Staff were slightly vague on process for disinfecting the main itself.

Water Safety Plan *Have appropriate risks been identified? Has appropriate progress been made to deliver interventions?*

<i>Ref.</i>	<i>Potential Risk</i>	<i>Identified Intervention</i>	<i>Progress with intervention</i>	<i>% actions complete</i>

Comments This rehabilitation job was in a difficult location, but was nevertheless being undertaken competently, with due regard for public health and water quality. Although there were no urgent concerns around the operation of the overland pipe, it was clear that there was much that could be improved with Scottish Water's procedure for such instances. There is also scope for reducing confusion around chlorine spray concentrations and Scottish Water's lead policy.